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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/942,663	08/31/2001	Shigeo Kittaka	N36-135850M/TH	7814

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EXAMINER
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STOCK JR, GORDON J

ART UNIT	PAPER NUMBER
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2877

DATE MAILED: 02/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/942,663

Applicant(s)

KITAKA ET AL.

Examiner

Gordon J Stock

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 20031029.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

### **DETAILED ACTION**

1. Preliminary Amendment received on August 31, 2001 has been entered into the file.

#### ***Priority***

2. Acknowledgment is made of applicant's claim for foreign priority based on applications filed in Japan on September 4, 2000; December 4, 2000; March 14, 2001. It is noted, however, that applicant has not filed certified copies of P2000-266533; P2000-368465; P2001-071830 applications as required by 35 U.S.C. 119(b).

#### ***Information Disclosure Statement***

3. As for the information disclosure statement received October 29, 2003 the sole document not considered was the European Search Report because it lacks the following information: a European application in order to properly identify the search report.

#### ***Specification***

4. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: means for making a mixture of various luminous flux having a plurality of wavelengths incident on a beam incidence end surface of said optical device; and means for detecting beam rays made to exit from a beam exit end surface of said optical device at different angles in accordance to wavelengths and/or polarized beam components of claims 10, 26, and 27 lack antecedent basis. As for claim 15, the Examiner is broadly interpreting the claim limitations (see claim 15 below); however, Examiner notes that a surface parallel to the layer surfaces along the length of the multiplayer structure as being provided as said beam incidence surface lacks antecedent basis.

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5. The specification is objected to for the following: on line 1 of page 2, the phrase, “demultiplexing/detection” should read—demultiplexing/detection--; on page 3 line 16, it is unclear as to what “optical axis 5” is referring. Corrections required.

***Drawings***

6. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “means for making a mixture of various luminous having a plurality of wavelengths incident on an end surface of said multiplayer structure” must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. In addition, as Examiner explained above in regards to claim 15, a surface parallel to the layer surfaces along the length of the multiplayer structure as being provided as said beam incidence surface lacks antecedent basis.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

7. Figure 26 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

8. The drawings and specification are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: 20 of Fig. 17; 8, 9, 10, 11, 12, 4, and 15 of Fig. 20. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are

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required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. **Claims 14, 17-27** rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

11. **Claims 14 and 17** are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors. **Claims 18-27** are rejected for being dependent on a rejected base claim.

***Claim Rejections - 35 USC § 102***

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. **Claims 1-6** are rejected under 35 U.S.C. 102(b) as being anticipated by **Kosaka et al.** (“**Superprism phenomena in photonic crystals**”).

As to claims 1-6, Kosaka discloses a periodic multilayer, wherein an end surface which is not parallel to layer surfaces is used as a beam incidence; wherein the period is greater than or equal to a wavelength, .956 microns divided by 2 times (3.24 + 1.46) which is .32 microns; the

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layers are two different materials; Fig. 2 demonstrates the varying continuous nature of the layer between every two layers which can be the actual same layer of silicon or silicon dioxide; the difference between the refractive index is 3.24-1.46 which is not smaller than .1 in a wavelength used; and Figure 2 shows that the end surface is perpendicular (Fig. 2; col. 2, second paragraph; column 3, paragraphs 1 and 2).

14. **Claims 1, 3, and 6-9** are rejected under 35 U.S.C. 102(b) as being anticipated by **Inoue et al. (5,033,810)**.

As to **claims 1, 3, 6-9**, Inoue in an optical device discloses the following: a periodic multilayer structure, wherein two end surfaces are used for an entrance and exit surface; layers are formed out of different materials; end surfaces are perpendicularly crossed layer surfaces; exit surface crosses layer surfaces; exit and incident surfaces are parallel; and one structure is repeated with respect to a wavelength used (Fig. 1; Fig. 4b; col. 2, lines 45-67; col. 3, lines 1-5; col. 4, lines 3-40; col. 6, lines 1-40).

15. **Claim 1, 3, 6, and 9-11** are rejected under 35 U.S.C. 102(b) as being anticipated by **Normandin et al. (5,111,466)**.

As for **claims 1, 3, 6, and 9-11**, Normandin in an optical multilayer structure for harmonic laser emission discloses: a multilayer structure with an end surface not parallel to layer surfaces of said multilayer structure used as a beam incidence or exit surface; layers are formed of different materials; end surface on which beam is incident crosses said layer surfaces substantially perpendicular; one structure on substrate is repeated with respect to wavelength used; means for making a mixture of various luminous flux having a plurality of wavelengths; and means for detecting beam rays exiting at different angles in accordance to frequencies; beam

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rays made to exit from said multiplayer film toward said substrate are reflected in the inside of said substrate and taken out from an end surface of said substrate (Figs. 1, 8, 9; col. 3, lines 1-15 and 55-67; col. 6, lines 55-65; col. 7, lines 15-30).

***Claim Rejections - 35 USC § 103***

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

17. **Claim 2** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Normandin et al. (5,111,466)** in view of **Kosaka et al. ("Superprism phenomena in photonic crystals")**.

As to **claim 2**, Normandin discloses everything as above. He is silent concerning the specific period condition. However, Kosaka teaches that the specific period condition is satisfied to demonstrate superprism behavior and highly modulated band dispersion (col. 2, paragraph 2; cols. 3-4; col. 5, paragraph 2). Therefore, it would be obvious to one skilled in the art to have the period be equal to or greater than half the ratio of wavelength to the mean refractive index to have highly modulated band dispersion.

18. **Claim 12 and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Normandin et al. (5,111,466)** in view of **Yeh et al. (Electromagnetic propagation ... media)**

As to **claims 12 and 15**, Normandin discloses everything as above (see **claim 1**). However, he does not mention a one-dimensional photonic crystal. However, Yeh discloses that periodic stratified material may be regarded as one-dimensional photonic crystal, a one-dimensional lattice (page 425, col. 1, lines 5-10). Therefore, it would be obvious to one skilled

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in the art at the time that Normandin multilayer structure is regarded as a one-dimensional photonic crystal for periodic stratified materials may be regarded as one-dimensional lattices. As for **claim 12**, the exit surface is parallel to the layer surfaces and the incident is approximately perpendicular (Fig. 1). As for **claim 15**, in regards to surfaces, the ends constitute surfaces with a surface area comprising the length of the thicknesses of the layers times the width of the width of the layers, thereby, a surface of the layers; and the light exits an end surface that constitutes a surface with a surface area that comprises the length of the top layer times the width of the top layer (Figs. 1, 8, 9).

19. **Claims 13 and 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Normandin et al. (5,111,466)** in view of **Yeh et al. (Electromagnetic propagation ... media)** further in view of **Kosaka et al. ("Superprism phenomena in photonic crystals")**.

As to **claims 13 and 16**, Normandin in view of Yeh disclose everything as above (see **claims 12 and 15** above). However, they are silent concerning the specific period condition. However, Kosaka teaches that the specific period condition is satisfied to demonstrate superprism behavior and highly modulated band dispersion (col. 2, paragraph 2; cols. 3-4; col. 5, paragraph 2). Therefore, it would be obvious to one skilled in the art to have the period be equal to or greater than half the ratio of wavelength to the mean refractive index to have highly modulated band dispersion.

***Allowable Subject Matter***

20. **Claims 14, 17-27** would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

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As to **claim 14**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in an optical device the particular condition being satisfied, in combination with the rest of the limitations of **claims 14, 18-27**.

As to **claim 17**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in an optical device the particular condition being satisfied, in combination with the rest of the limitations of **claim 17**.

### *Conclusion*

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

U.S. Patent RE37,809 to Deacon et al.

### *Fax/Telephone Numbers*

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

- 1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and
- 2) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

*Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is: (703) 872-9306*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (571) 272-2431. The examiner can normally be reached on Monday-Friday, 8:00 a.m. - 4:30 p.m.

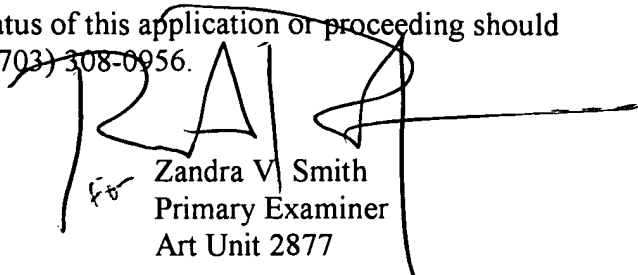
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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



gs

January 24, 2004

  
Zandra V. Smith  
Primary Examiner  
Art Unit 2877

**Richard A. Rosenberger**  
**Primary Examiner**